Repair of a coccygeal hernia with a biological mesh

F. Hoexum *, R.J.C.L.M Vuylsteke
Kennemer Gasthuis, Haarlem, The Netherlands

A R T I C L E   I N F O

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A B S T R A C T

Coccygeal herniation after coccygectomy is rare. Little is known about the management of this complica-
tion. We present a case of a 44 year old women with a coccygeal herniation 7 years after coccygectomy.
She was treated twice for an infected pilonidal sinus with incision and drainage. After the last incision
and drainage she had complaints of a painful swelling in the sacral area and difficulty with evacuation
of her stools. A defaecography showed a coccygeal herniation. An additional MRI of the pelvic region
showed a defect with a diameter of approximately 38 mm. We performed a hernia repair with a biolog-
ic mesh (Strattice™ surgical mesh, LifeCell Corporation USA) via a sacral approach. Her recovery was
clinical signs of infection after which the wound healed per secun-
dam. Six months after the coccygectomy she visited the outpatients clinic with complaints of a small lump
underneath her scar. An ultrasound showed partial bulging of her pelvic organs during a Valsalva manoeuvre.
At that time no surgical intervention was deemed necessary and she was discharged from further follow
up. In July 2006 and March 2013 an incision and drainage of an infected pilonidal sinus was performed. No abnormal findings were
reported during each procedure. Three months after her last incision and drainage, she reported a painful swelling at the site of the
last incision and drainage. The complaints worsened with increased intra-abdominal pressure during squeezing or coughing. Further-
more the process of evacuating stools was problematic, she had to apply manual pressure from the outside on the sacral swelling to
be able to perform defecation. Physical examination showed a tender swelling at the site of her most recent incision an drainage of
the pilonidal sinus with the clinical suspicion on a herniation of her bowel (Fig. 1a). A defaecography showed a coccygeal hernia-
tion (Fig. 1b). Defecation was only possible with manual pressure from the outside on the swelling whereby the herniation dissolved
(Fig. 1c). An additional MRI showed a defect with a diameter of approximately 3,8 cm. Because of the risks of infection we elected a
hernia repair with a biological mesh (Strattice™ surgical mesh, LifeCell Corporation USA). Due to a possible hypersensitivity
of the patient to pork, a cutaneous allergy-test was performed. No adverse reactions to the used material were seen. We performed a
hernia repair via a Kraske approach with the patient in a jack knife position. The biological mesh was placed with a sub lay technique
and secured with prolene (Johnson & Johnson Inc. USA) sutures. The fascia, sub cutis and skin were closes separately after placing a

1. Introduction

Coccygectomy is performed in the surgical treatment of both malignant and benign tumours arising from the coccyx, such as
saccrococcygeal teratoma or sacrococcygeal extraspinal ependymomas. Another less common complication for coccygectomy is
coccygodynia, a condition characterised by pain or tenderness in the coccygeal region. A rare complication after coccygectomy is a
coccygeal hernia. We present a case of a 44 year old women with a coccygeal herniation 7 years after coccygectomy.

2. Case report

A 34 year old woman was referred in August 2003 to our department with complaints of coccygodynia. She had experienced pain
over the last 7 years in her coccygeal region during sitting or laying on her back. Conservative treatment with injections in the coc-

ysgeal region (presumably cortisone) in a hospital on Saint Martin did not provide a definite resolution of her complaints. Besides
degenerative alterations at level L5-S1 no other abnormalities could be indentified on plain X-rays. Our initial conservative treatment
(kenacort injections) resulted in temporary relief of her complaints. Another less common indication for coccygectomy is

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Fig. 1. Pre-operative photograph of the sacral region and defaecography.
A = Tender swelling at the site of the last incision and drainage of an infected pilonidal sinus.
B = Defaecography with the apparent coccygeal herniation.
C = The osseous structures of the hand are seen on the right, the herniation resolves and defecation is possible.

Fig. 2. Photo compilation of the hernia repair.
The hernial sac is removed (A–C). The hernia site is clearly visible on image (D). The biological mesh is cut to size and positioned with a sublay technique and secured with prolene sutures (E and F). After a wound drain is placed, the wound is closed in layers (G and H).

wound drain (Fig. 2a–h). Her post-operative recovery was uncomplicated. The wound drain could be removed the 4th postoperative day and she was discharged the following day. On the 14th postoperative day the skin sutures were removed. Unfortunately the next day she was diagnosed with a wound dehiscence without any clinical signs of infection. Her sacral wound healed per secundam over a period of two weeks (Fig. 3a). Her mechanical complaints were completely resolved by the operation. A defaecography 2 months after surgery showed no residual hernia in the coccygeal region (Fig. 3b). She was discharged from further follow up.

Fig. 3. Postoperative photograph and defaecography 2 months after surgery.
3. Discussion

Coccygectomy is performed in the surgical treatment of both malignant and benign tumors arising from the coccyx, such as sacrococcygeal teratoma or sacrococcygeal extraspinal ependymomas [1,2]. Another less common indication for coccygectomy is coccygodynia, a condition characterised by pain or tenderness in the coccygeal region [3–5]. It could be the result of severe trauma, repetitive injury, post childbirth, local tumors, disk degeneration and of idiopathic nature. The exact pathophysiologic mechanisms associated with coccygodynia are still obscure, while obesity is considered as a predisposing factor due to the resulting pelvic rotation [3]. A rare complication after coccygectomy is a coccygeal hernia. Pagenstecher is believed to be the first to report a coccygeal hernia in a 50-year-old woman who had undergone a coccygectomy for coccygodynia [6]. To our knowledge, only 8 cases have been reported with a true coccygeal hernia [6–13]. Because of the small number of reported cases, little is known about the best treatment of this complication. Primary herniorrhaphy, mesh repair, muscle transposition and hernia repair with de-epithelialised musculocutaneous flaps have been described (Table 1, ). Besides a direct sacral approach also anterior abdominal and laparoscopic procedures are mentioned. We chose a sacral approach because of the relatively mild invasiveness of this procedure compared with laparoscopic transabdominal approach. This approach is similar to the approach Paul Kraske presented in 1885 in a lecture at the Fourteenth Congress of the German Society of Surgery on the subject of the transsacral approach to the removal of rectal cancer [14]. Most evidence in the prevention or treatment of herniation in the pelvic region is related to perineal herniations after proctectomy or abdominal-perineal excision in the management of rectal malignancies. Mesh repair, musculocutaneous flaps and more recent biological tissue matrix have been used in the prevention and treatment of pelvic herniations [15–18]. We performed a mesh repair with a biological tissue matrix derived from porcine skin because of the possible advantages in biocompatibility and suitability in infected wounds or those that are at high risk to develop infectious wound complications [17]. The use of this costly matrix was justified by analyzing the available literature. Of the seven non biological mesh repairs described in the literature, 4 were unsuccessful or complicated by infection (Table 1). Definitive hernia repair had to be performed using major surgical procedures; e.g. gluteus maximus transposition or vertical rectus abdominis musculocutaneous (VRAM) flap reconstruction. Although based on small numbers, we concluded that a 57% risk on failure and consequent re-hospitalization and re-intervention wasn’t cost-effective.

4. Conclusion

The use of a biological mesh is feasible and effective in the surgical management of a coccygeal hernia. To our knowledge it’s the first reported case of a coccygeal hernia repair with a biological mesh.

Conflicts of interest
Nothing to declare.

Sources for funding
Nothing to declare.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution
Study design: FH, RV.
Data collections: FH, RV.
Data analysis : FH.
Writing: FH, RV.

References


Table 1

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>M/F</th>
<th>Age</th>
<th>Indication coccygectomy</th>
<th>Treatment</th>
<th>Success</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balkenende [8]</td>
<td>F</td>
<td>43</td>
<td>Block excision pilonidal sinus and coccyx</td>
<td>Herniorrhaphy</td>
<td>Yes</td>
<td>Sacral</td>
</tr>
<tr>
<td>Zook [9]</td>
<td>F</td>
<td>42</td>
<td>Chronic tailbone pain after trauma</td>
<td>1st mesh</td>
<td>1st No; chronic wound, mesh dehiscence</td>
<td>Sacral</td>
</tr>
<tr>
<td>Miranda [12]</td>
<td>F</td>
<td>46</td>
<td>Coccygeal tumor</td>
<td>1st mesh (prevention)</td>
<td>1st No; herniation</td>
<td>1st sacral</td>
</tr>
</tbody>
</table>

F = female, M = male, VRAM = Vertical rectus abdominis myocutaneous.